

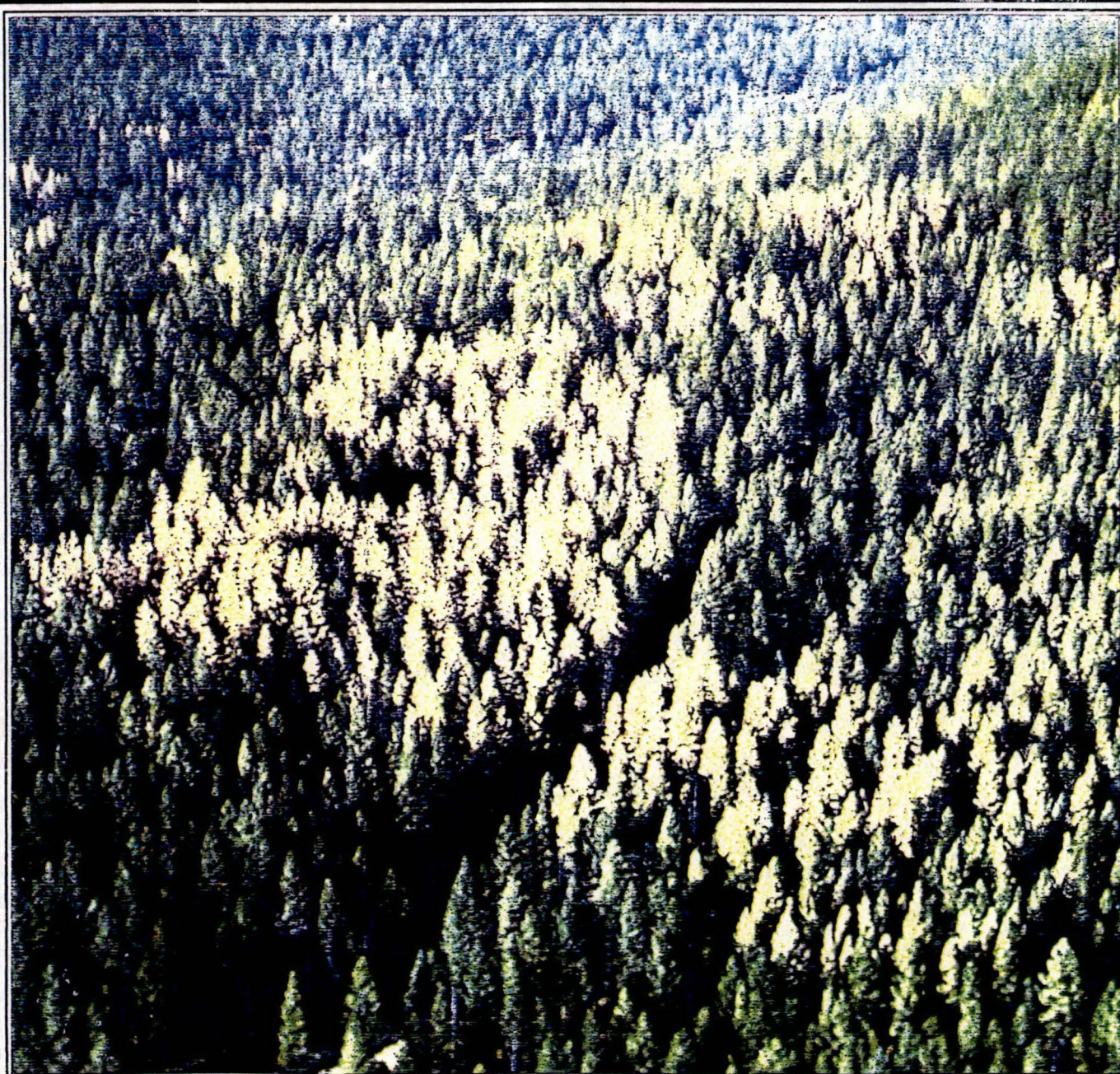
Thesis/
Reports
Knapp, A.

FOREST PEST CONDITIONS ON THE SOUTHERN
IDAHO FORESTS 1968-1992

United States
Department of
Agriculture
Forest Service
Intermountain
Region
Forest Pest
Management



Forest Pest Conditions on Southern Idaho Forests 1968 – 1992



Forest Pest Conditions on Southern Idaho Forests 1968-1992

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Forest Pest Management

State & Private Forestry

USDA Forest Service

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January

1993

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HISTORICAL PEST SURVEY INFORMATION NATIONAL FORESTS OF SOUTHERN IDAHO

Since 1987 precipitation levels in southern Idaho have been substantially below previous yearly averages resulting in a significant moisture deficit in forested areas. This, combined with other biotic and abiotic factors, has contributed to widespread outbreaks of insect pests throughout southern Idaho. Additionally, trees weakened by several years of drought have been rendered very susceptible to injury and death by a multitude of forest diseases. Since it will take several years of average to above average precipitation to restore trees to a vigorous condition, continued tree damage and mortality caused by insect and disease pests can be expected throughout forests in southern Idaho.

This report briefly summarizes historical forest insect and disease activity throughout the Boise, Caribou, Challis, Payette, Salmon, Sawtooth, and Targhee National Forests in southern Idaho. Status of insect pests is based primarily on aerial detection surveys which are conducted annually due to the rapidly changing nature of insect pest populations. These surveys have been conducted since the mid 1960's and offer an economical method of determining occurrence, severity, and change of forest pest activity. Approximately 75 percent of forested land in southern Idaho is surveyed each year. Status of forest diseases is based largely on ground surveys. While detection of forest diseases is more difficult, time consuming, and costly than detection of insect forest pests, the slow rate of change in occurrence and severity of forest diseases enable monitoring to be far less frequent.

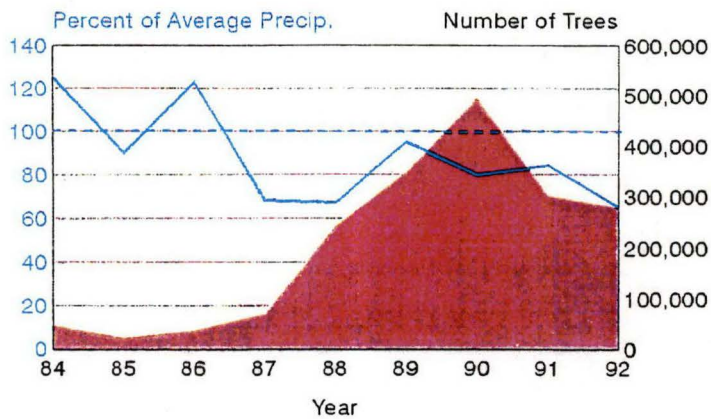
Major insect pests in southern Idaho are the various bark beetles and defoliating insects: Douglas-fir beetle, western pine beetle, fir engraver beetle, mountain pine beetle, western spruce budworm, and Douglas-fir tussock moth. The primary disease in southern Idaho forests is dwarf mistletoe. One should note that through suppression efforts and cultural management the incidence and severity of this pest is gradually decreasing.

Following is a Forest by Forest summary of forest pest activity throughout southern Idaho. Tree mortality and acres defoliated are displayed in both graphic and tabular format. Our data are complete from the mid 1960's to the present; however, not all the information has been entered into our Geographical Information System. Therefore, some graphs and tables display data from 1966 to present and some display data from 1982 to present.

Cover photo: Bark beetles killed over 300,000 trees during 1992 in southern Idaho. This area of bark beetle caused tree mortality is located near Idaho city, Idaho on the Boise National Forest.

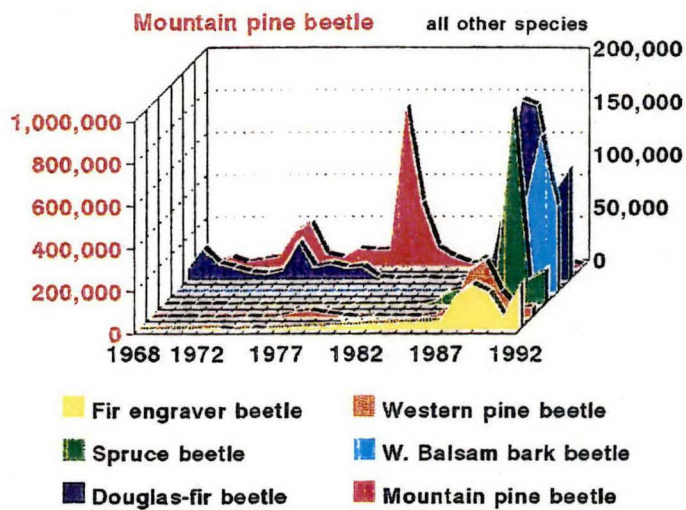
Photographer: K. Andrew Knapp

Trees Killed by Bark Beetles & Percent of Average Precipitation In Southern Idaho 1984 - 1992*

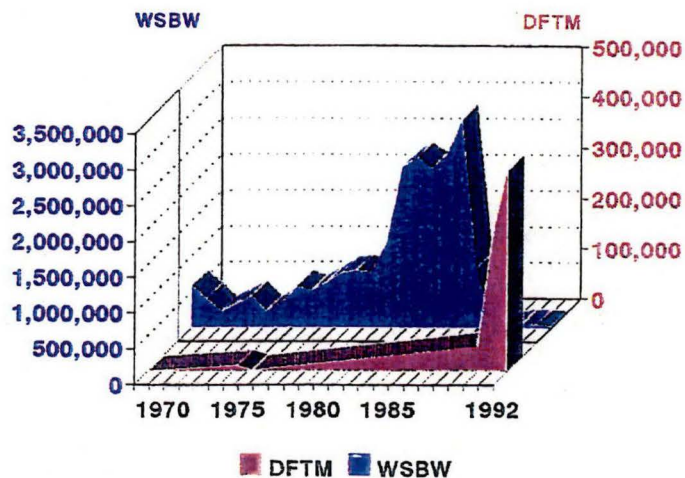


*1992 Precip. #'s estimated

Trees Killed By Bark Beetles On National Forests of Southern Idaho 1968 - 1992



Acres Defoliated By Western Spruce Budworm and Douglas-fir Tussock Moth On National Forests Of Southern Idaho 1968 - 1992



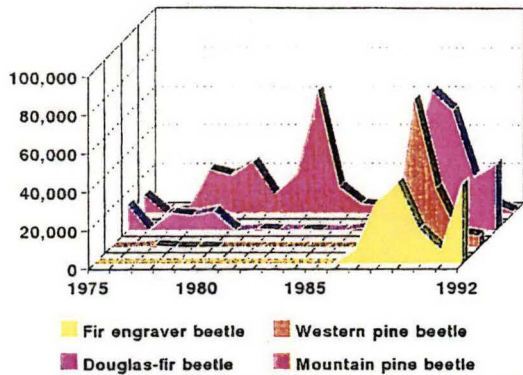
Southern Idaho Forests

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	10,500	105,500	8,900	32,000	41,900	80,400	403,000	32,000
1991	30,400	80,400	8,200	23,800	12,300	147,609	287,500	49,300
1990	9,310	164,700	23,830	185,460	34,900	78,594	50,400	42,592
1989	29,602	170,467	53,162	32,108	42,700	20,259	0	10,876
1988	41,716	82,141	42,706	44,756	32,300	0	0	42,177
1987	26,797	10,816	9,926	15,873	7,900	0	0	834,500
1986	18,266	5,099	2,402	12,600	0	0	0	2,905,100
1985	18,810	637	120	2,604	0	0	0	2,424,403
1984	46,708	513	301	70	0	0	0	2,228,257
1983	95,014	1,064	354	0	0	0	0	2,375,519
1982	305,961	1,000	516	0	0	0	0	2,258,635
1981	762,810	579	54	0	0	0	0	1,209,300
1980	83,208	2,084	870	0	0	0	0	775,300
1979	80,568	12,464	3,319	0	0	0	0	795,900
1978	90,820	10,865	6,045	0	0	0	0	771,800
1977	46,045	14,945	4,315	0	0	0	0	630,260
1976	62,575	11,590	110	0	765	0	0	513,800
1975	213,335	35,920	0	0	1,265	0	1,200	576,970
1974	171,725	9,170	305	0	165	0	11,000	337,000
1973	48,150	5,460	0	0	1,500	0	0	223,900
1972	40,055	7,090	15	0	1,150	0	0	438,900
1971	24,380	11,480	0	0	620	0	0	333,400
1970	51,285	15,524	30	45	585	0	0	226,700
1969	16,210	30,349	120	40	230	0	0	400,200
1968	5,405	0	0	60	135	0	0	587,000
Total	2,329,655	800,057	165,600	349,416	178,415	326,862	753,100	21,023,889

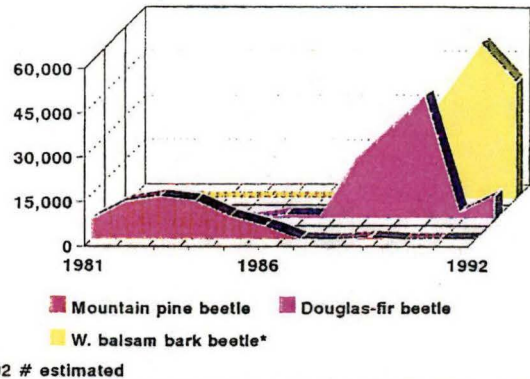
MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
 WSBW=Western Spruce Budworm, ESB=Engleman Spruce Beetle.

BARK BEETLES

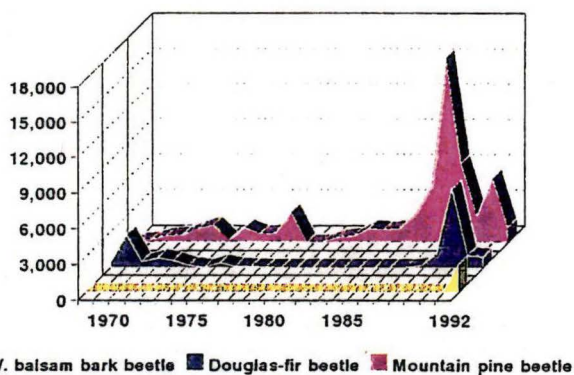
**Trees Killed By Bark Beetles
Boise National Forest 1975 - 1992**



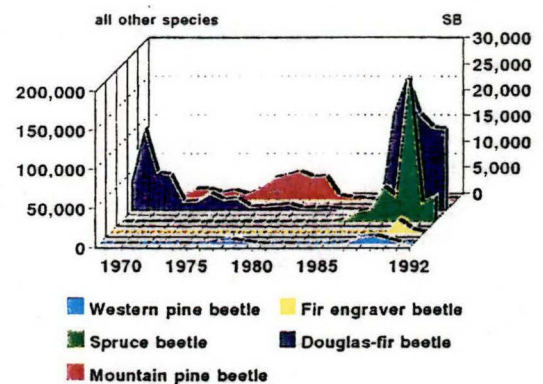
**Trees Killed By Bark Beetles
Caribou National Forest 1981 - 1992**



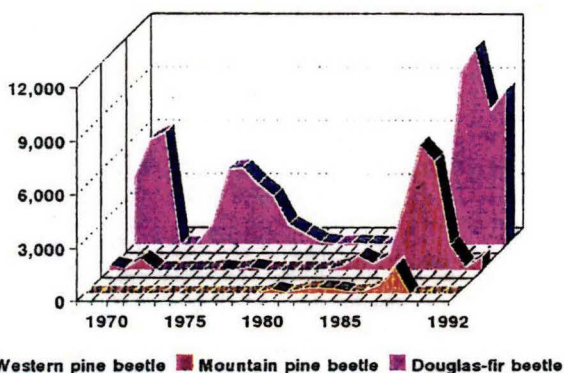
**Trees Killed By Bark Beetles
Challis National Forest 1968 - 1992**



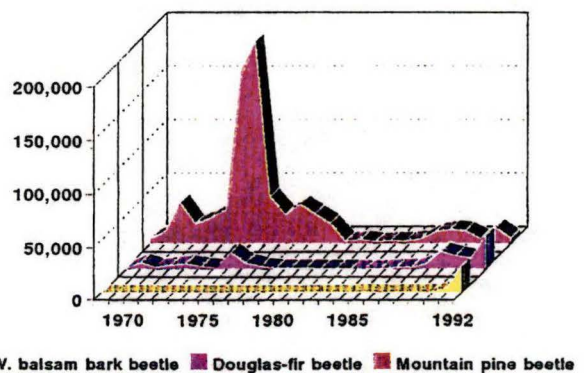
**Trees Killed By Bark Beetles
Payette National Forest 1968 - 1992**



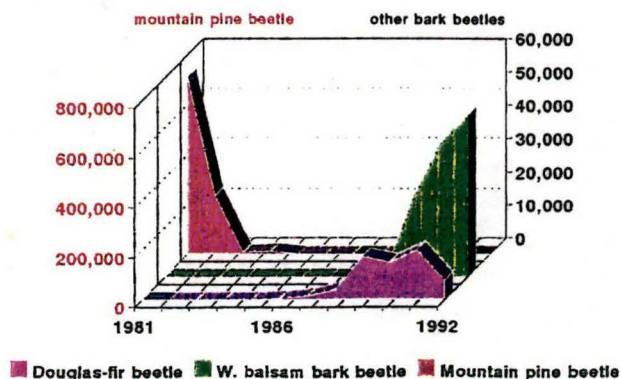
**Trees Killed By Bark Beetles
Salmon National Forest 1968 - 1992**



**Trees Killed By Bark Beetles
Sawtooth National Forest 1968 - 1992**

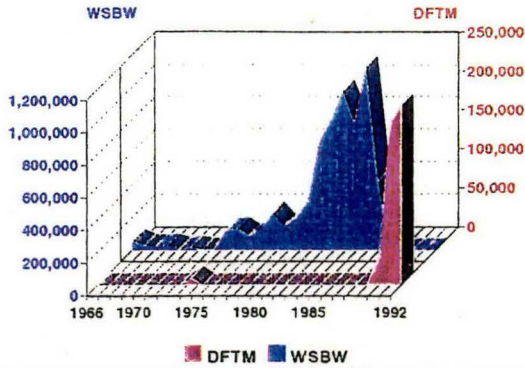


**Trees Killed By Bark Beetles
Targhee National Forest 1981 - 1992**

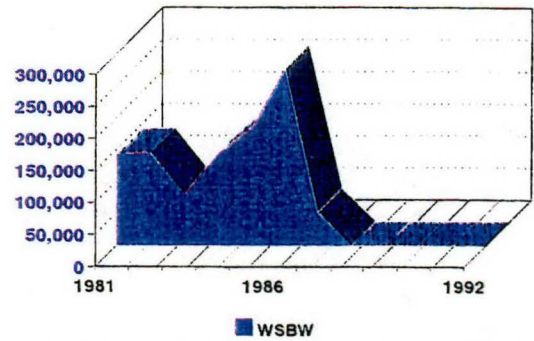


DEFOLIATORS

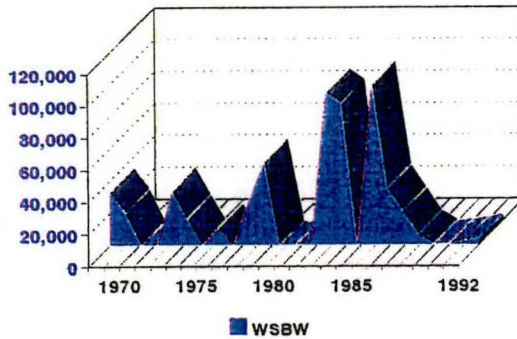
Acres Defoliated By
Western Spruce Budworm and Douglas-fir Tussock Moth
Boise National Forest 1966 - 1992



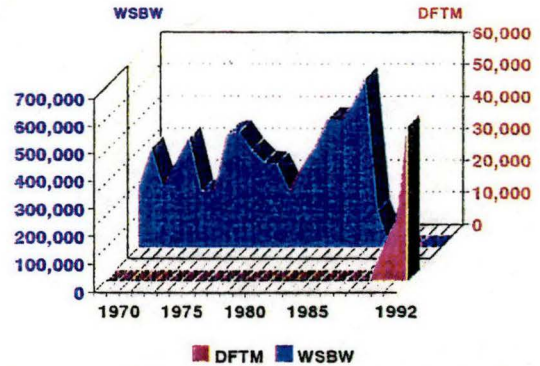
Acres Defoliated By
Western Spruce Budworm
Caribou National Forest 1981 - 1992



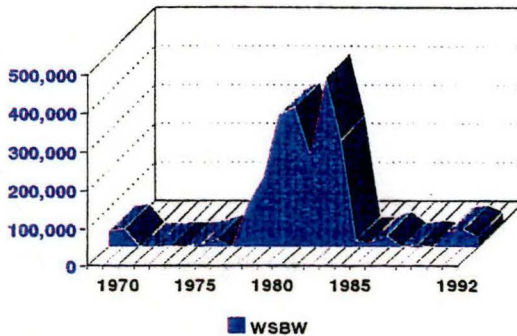
Acres Defoliated By
Western Spruce Budworm
Challis National Forest 1968 - 1991



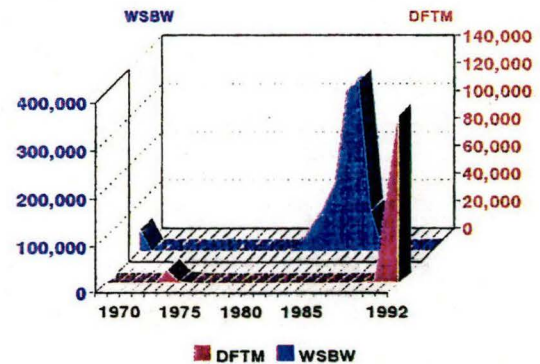
Acres Defoliated By
Western Spruce Budworm and Douglas-fir Tussock Moth
Payette National Forest 1968 - 1992



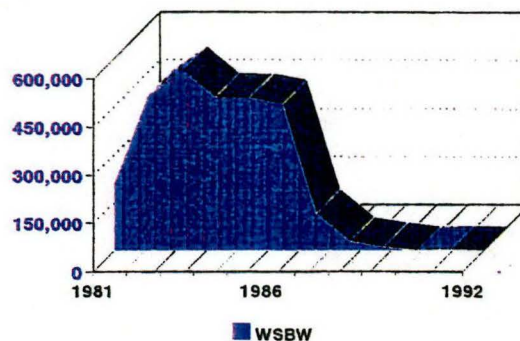
Acres Defoliated By
Western Spruce Budworm
Salmon National Forest 1968 - 1992



Acres Defoliated By
Western Spruce Budworm and Douglas-fir Tussock Moth
Sawtooth National Forest 1968 - 1992



Acres Defoliated By
Western Spruce Budworm
Targhee National Forest 1981 - 1992



Boise National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	800	34,900	5,800	100	41,900	3,500	231,100	0
1991	6,000	27,900	7,600	0	7,200	9,000	209,300	0
1990	500	62,400	30,700	0	18,100	0	36,800	0
1989	900	72,700	77,300	0	42,700	0	0	0
1988	4,400	33,800	0	0	32,300	0	0	300
1987	4,500	5,000	0	0	7,900	0	0	426,700
1986	4,200	1,700	0	0	0	0	0	1,133,700
1985	5,000	200	0	0	0	0	0	786,000
1984	14,000	200	0	0	0	0	0	981,900
1983	64,000	400	0	0	0	0	0	811,000
1982	21,000	300	0	0	0	0	0	674,500
1981	10,000	800	0	0	0	0	0	303,300
1980	27,000	0	0	0	0	0	0	204,200
1979	20,000	10,000	100	0	0	0	0	147,400
1978	23,000	8,000	200	0	0	0	0	228,000
1977	2,000	9,000	1,000	0	0	0	0	132,100
1976	0	0	0	0	0	0	0	90,300
1975	10,000	13,500	0	0	0	0	0	132,500
1974	0	0	0	0	0	0	9,000	121,600
1973	0	0	0	0	0	0	0	3,700
1972	0	0	0	0	0	0	0	4,200
1971	0	0	0	0	0	0	0	17,200
1970	0	0	0	0	0	0	0	5,800
1969	0	0	0	0	0	0	0	31,000
1968	0	0	0	0	0	0	0	27,700
1967	0	300	0	0	0	0	0	28,900
1966	0	0	0	0	0	0	0	59,400
Total	217,300	280,800	122,700	100	150,100	12,500	486,200	6,403,600

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
 WSBW=Western Spruce Budworm, ESB=Engelman Spruce Beetle.

Caribou National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	200	8,000	0	0	5	0	0	0
1991	200	2,400	0	0	0	52,500	0	0
1990	0	41,960	0	0	0	35,850	0	0
1989	636	31,652	0	0	0	18,659	0	0
1988	0	20,662	0	0	0	0	0	0
1987	182	1,262	0	0	0	0	0	52,000
1986	4,628	1,415	0	0	0	0	0	276,900
1985	7,995	50	0	0	0	0	0	185,154
1984	13,200	0	0	0	0	0	0	145,106
1983	14,703	20	0	0	0	0	0	80,160
1982	12,964	40	0	0	0	0	0	145,253
1981	6,811	158	0	0	0	0	0	144,100
Total	61,519	107,619	0	0	5	107,009	0	1,028,673

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
 WSBW=Western Spruce Budworm, ESB=Engelman Spruce Beetle.

Payette National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	2,000	15,800	2,800	31,700	0	0	48,500	0
1991	1,800	16,000	1,000	23,800	5,100	0	18,400	0
1990	0	18,535	5,680	185,460	16,800	0	11,000	0
1989	367	25,779	10,476	32,108	0	0	0	0
1988	517	18,857	8,829	44,756	0	0	0	0
1987	1,287	1,855	1,364	15,873	0	0	0	134,800
1986	734	301	235	12,600	0	0	0	618,400
1985	1,090	189	0	2,604	0	0	0	527,600
1984	2,868	257	0	70	0	0	0	463,800
1983	5,880	574	0	0	0	0	0	469,000
1982	30,316	534	217	0	0	0	0	365,400
1981	29,432	529	0	0	0	0	0	300,500
1980	36,713	1,280	593	0	0	0	0	207,600
1979	32,356	1,080	3,219	0	0	0	0	303,900
1978	28,000	880	5,845	0	0	0	0	308,900
1977	15,705	800	3,315	0	0	0	0	354,000
1976	7,495	2,455	110	0	0	0	0	422,200
1975	12,725	2,115	0	0	0	0	0	413,940
1974	9,500	3,435	305	0	0	0	0	208,800
1973	14,345	1,835	0	0	0	0	0	203,400
1972	14,375	1,760	15	0	0	0	0	400,100
1971	4,905	6,945	0	45	0	0	0	316,200
1970	11,435	7,260	30	10	0	0	0	220,900
1969	4,050	15,929	120	10	0	0	0	362,200
1968	0	5,420	0	0	0	0	0	221,600
Total	267,895	150,404	44,153	349,036	21,900	0	77,900	6,823,240

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
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Challis National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	1,300	900	0	0	0	2,400	0	3,900
1991	5,500	1,000	0	0	0	0	0	2,200
1990	2,320	6,615	0	0	0	0	0	755
1989	6,703	1,279	0	0	0	0	0	248
1988	15,707	176	0	0	0	0	0	6,200
1987	4,730	0	0	0	0	0	0	20,900
1986	2,494	0	0	0	0	0	0	34,900
1985	1,170	0	0	0	0	0	0	100,227
1984	1,115	0	0	0	0	0	0	615
1983	1,190	0	0	0	0	0	0	88,380
1982	525	0	0	0	0	0	0	95,000
1981	437	0	0	0	0	0	0	2,100
1980	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1978	2,600	20	0	0	0	0	0	51,700
1977	780	55	0	0	0	0	0	28,800
1976	765	85	0	0	0	0	0	0
1975	1,265	390	0	0	0	0	0	10,600
1974	165	0	0	0	0	0	0	0
1973	1,500	160	0	0	0	0	0	16,400
1972	1,150	570	0	0	0	0	0	33,700
1971	620	810	0	0	0	0	0	0
1970	585	470	0	0	0	0	0	0
1969	230	2,740	0	0	0	0	0	20,000
1968	135	520	0	0	0	0	0	33,300
Total	52,986	15,790	0	0	0	2,400	0	549,925

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
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WSBW=Western Spruce Budworm, ESB=Engelman Spruce Beetle.

Salmon National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	800	8,700	0	100	0	400	0	28,100
1991	200	7,600	0	0	0	0	0	46,200
1990	1,420	11,095	0	0	0	0	0	41,837
1989	6,111	9,708	0	0	0	0	0	288
1988	7,020	845	1,623	0	0	0	0	5,812
1987	3,754	79	602	0	0	0	0	600
1986	852	133	155	0	0	0	0	29,600
1985	381	42	120	0	0	0	0	14,389
1984	788	28	301	0	0	0	0	15,370
1983	232	50	354	0	0	0	0	277,700
1982	34	84	299	0	0	0	0	440,600
1981	0	50	54	0	0	0	0	241,400
1980	0	144	277	0	0	0	0	363,500
1979	0	632	0	0	0	0	0	344,600
1978	0	1,120	0	0	0	0	0	183,200
1977	175	2,700	0	0	0	0	0	115,360
1976	10	3,395	0	0	0	0	0	1,300
1975	90	4,310	0	0	0	0	0	19,910
1974	10	4,225	0	0	0	0	0	6,600
1973	0	1,200	0	0	0	0	0	400
1972	0	0	0	0	0	0	0	900
1971	0	0	0	0	0	0	0	0
1970	660	6,302	0	0	0	0	0	0
1969	75	5,900	0	0	0	0	0	47,000
1968	275	3,805	0	0	0	0	0	43,000
Total	22,887	72,147	3,785	100	0	400	0	2,267,666

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
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Sawtooth National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	5,300	31,300	200	14	0	25,200	123,400	0
1991	15,000	10,200	0	0	0	5200	69,200	0
1990	5,070	12,505	0	0	0	800	2,100	0
1989	12,399	16,052	0	0	0	0	0	0
1988	13,737	4,687	0	0	0	0	0	1,173
1987	11,609	1,200	0	0	0	0	0	84,100
1986	4,620	1,202	0	0	0	0	0	354,800
1985	2,691	141	0	0	0	0	0	335,400
1984	2,934	20	0	0	0	0	0	144,500
1983	2,260	20	0	0	0	0	0	88,700
1982	4,097	42	0	0	0	0	0	51,600
1981	2,683	157	0	0	0	0	0	8,300
1980	19,145	660	0	0	0	0	0	0
1979	28,182	752	0	0	0	0	0	0
1978	37,720	845	0	0	0	0	0	0
1977	27,385	2,390	0	0	0	0	0	0
1976	44,305	5,655	0	0	0	0	0	0
1975	189,255	15,605	0	0	0	0	0	0
1974	162,050	1,510	0	0	0	0	1,200	0
1973	32,305	2,245	0	0	0	0	11,000	0
1972	24,530	4,760	0	0	0	0	0	0
1971	18,855	3,725	0	0	0	0	0	0
1970	38,605	1,492	0	0	0	0	0	0
1969	11,855	5,780	0	0	0	0	0	0
1968	4,980	655	0	0	0	0	0	46,000
Total	721,072	123,600	200	14	0	31,200	206,900	1,114,573

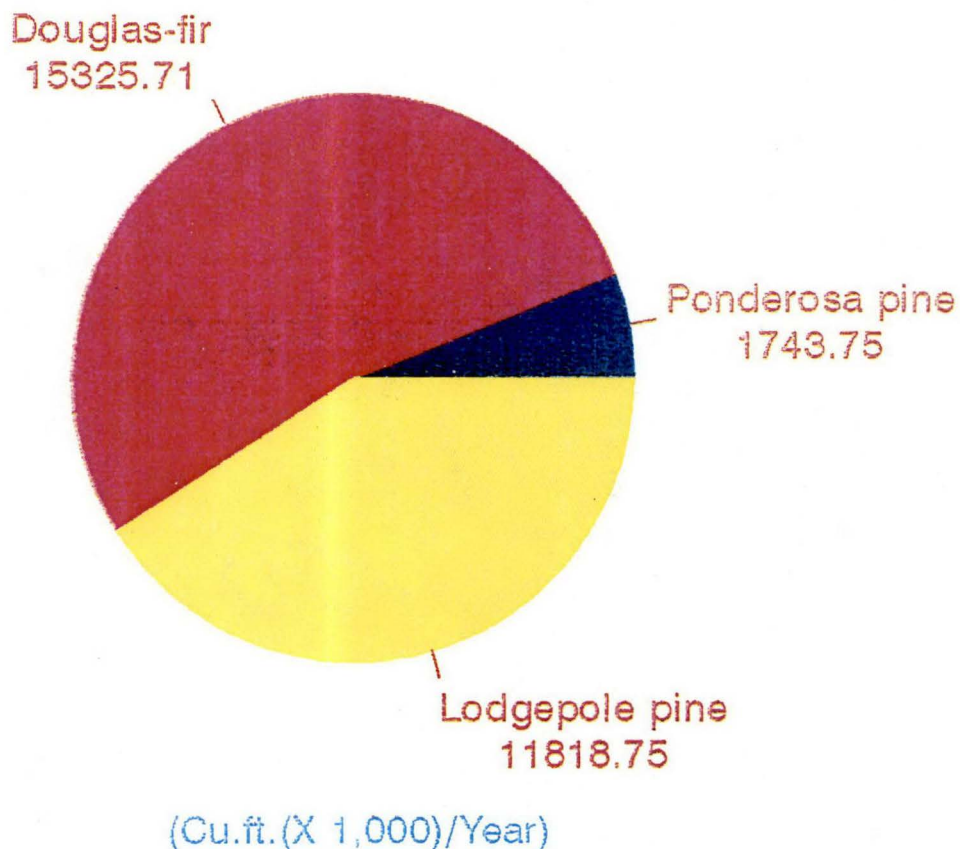
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 WSBW=Western Spruce Budworm, ESB=Engelman Spruce Beetle.

Targhee National Forest

Year	Number of Trees Killed						Acres Defoliated	
	MPB	DFB	WPB	ESB	FEB	WBBB	DFTM	WSBW
1992	200	5,900	0	0	0	48,800	0	0
1991	1,700	15,300	0	0	0	40,600	0	900
1990	0	11,590	0	0	0	24,085	0	0
1989	2,486	13,297	0	0	0	1,600	0	10,340
1988	335	3,114	0	0	0	0	0	28,692
1987	735	1,220	0	0	0	0	0	115,400
1986	738	348	0	0	0	0	0	456,800
1985	483	0	0	0	0	0	0	475,633
1984	11,803	0	0	0	0	0	0	476,966
1983	6,749	0	0	0	0	0	0	560,579
1982	237,025	0	0	0	0	0	0	486,282
1981	713,447	100	0	0	0	0	0	209,600
Total	975,701	50,869	0	0	0	115,085	0	2,821,192

MPB=Mountain Pine Beetle, DFB=Douglas-fir Beetle, WPB=Western Pine Beetle,
 FEB=Fir Engraver Beetle, WBBB=Western Balsam Bark Beetle, DFTM=Douglas-fir Tussock Moth,
 WSBW=Western Spruce Budworm, ESB=Engelman Spruce Beetle.

Estimated Impact of Dwarf Mistletoe by Species In Southern Idaho Forests



Percent Host Type Infected By 3 Types of Dwarf Mistletoe In Southern Idaho Forests

